ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX G

DIFFERENTIAL TEMPERATURE LOG AND ATLAS WIRELINE SERVICES INTERPRETATION LETTER

DIAGNOSTIC DIFFERENTIAL TEMPERATURE LOG

Hoechst Celanese Corporation
Well No. 2 - WDW #14
Bay City Plant
Matagorda County, Texas

Prepared for
ECO Solutions, Inc.
Houston, Texas

ATLAS WIRELINE SERVICES
WESTERN ATLAS INTERNATIONAL

February 22, 1994

Prepared by Freeman Hill, III

DISCLAIMER

In making interpretations of logs, our employees will give Customer the benefit of their best judgement, but since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or the correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the Customer resulting from any interpretation made/by any of our employees.

Disposal Well Background

The Hoechst Celanese Chemical Company , Inc.'s Injection Well No. 2 - WDW #14, located at the Bay City facility has been used for underground injection for the past 26 years. in addition to surface and intermediate casing strings, the well contains a string of 9 5/8 inch OD casing cemented to 3650 ft and 5.5 inch tubing and packer assembly, located at 3165 ft. Waste fluids have been injected into a perforated injection interval located below 3354 ft at rates of approximately 185 - 190 GPM.

A logging program consisting of a Radioactive Tracer ejector and detector instrument and a Differential Temperature Tool was used to evaluate the integrity of the casing and cement and to verify that the injection interval had accepted the disposed fluids.

The well was shut-in for 48 hours prior to initiating the logging program to provide a static, geothermal temperature profile. The following will list each step of the Differential Temperature logging program, its purpose and a discussion of the log's analysis.

Logging Program and Analysis

Differential Temperature Log (February 21, 1994)

1. Logged temperature instrument from surface to 3442 ft
   Purpose: Static temperature gradient.

   Analysis: Since uniform gradients are uncommon near surface due to fluctuating surface temperatures and changing lithologies with varying thermal diffusivities and conductivities, the irregularities found above 800 ft should be ignored.

   Below this depth, a fairly straight temperature gradient of approximately .004°F/ft is observed to 1600 ft. From 1600 ft to 3100 ft, a gradient of .006°F/ft exists. Some minor anomalies are noted; however, they can be attributed to varying lithologies. It is important to remember that due to the nature of shale (e.g., no permeability, compacted, little water content), the temperature recovery is retarded. Conversely, porous, permeable sands will reveal a faster thermal recovery from an altered temperature state. At 3150 ft the gradient flattens out, on the more sensitive scale it can observed that the gradient is decreasing from 3155 ft to 3169 ft, at this point the temperature rises slightly to a depth of 3200 ft. From 3200 ft there is a decrease in temperature to a low at a depth of 3320 ft. The temperature begins to rise up to and through the targeted injection zone. Below the perforations, at 3424 ft the temperature decreases once more.

   Since long-term injection yields long-term cooling, it is important to note that the area around the injection zone is still cool, as explained above. The injection, being more porous has recovered faster than the adjoining shales.

The temperature fluxuations around the packer do not inherently mean that there is a problem. This can be explained by the changes in metal mass and the temperature conductivity changes that can occur and cause fluxuations in the area around the packer.

Conclusion:

From the temperature alone, there is not any conclusive evidence of a leak or other interformational fluid movement. The injection interval appears to be taken all if not the majority of the fluids being injected into the well. The major temperature change occurs in the target injection interval.

FILE NO.

94061

API NO.

FINAL PRINT

HOECHST CELANESE CHEMICAL GROUP, INC.

WELL NO. 2 WELL - WDW 14

FIELD CELANESE PLANT

COUNTY MATAGORDA STATE TX.

LOCATION:
BAY CITY PLANT

SEC TWP RGE

OTHER SERVICES
TRACER

PERMANENT DATUM GL ELEV. N/A

LOGGING MEASURED FROM KB 11 FT. ABOVE P.D.

DRILLING MEASURED FROM KB

ELEVATIONS

KB N/A
DF N/A
GL N/A

DATE	2/22/94	
RUN	1	
SERVICE ORDER	143815	
DEPTH-DRILLER	3650	
DEPTH-LOGGER	3443	
BOTTOM LOGGED INTERVAL	3443	
TOP LOGGED INTERVAL	20	
TYPE FLUID IN HOLE	BRINE	
SALINITY PPM CL.	N/A	
DENSITY LB/GAL.	N/A	
LEVEL	FULL	
MAX. REC. TEMP. DEG. F	101	
OPR. RIG TIME	CRANE	
EQUIP. NO. / LOC.	6428 HOUSTON	
RECORDED BY	FERGUSON	
WITNESSED BY	MR. HALL	

BOREHOLE RECORD

NO.	BIT	FROM	TO

FOLD HERE

CASING RECORD

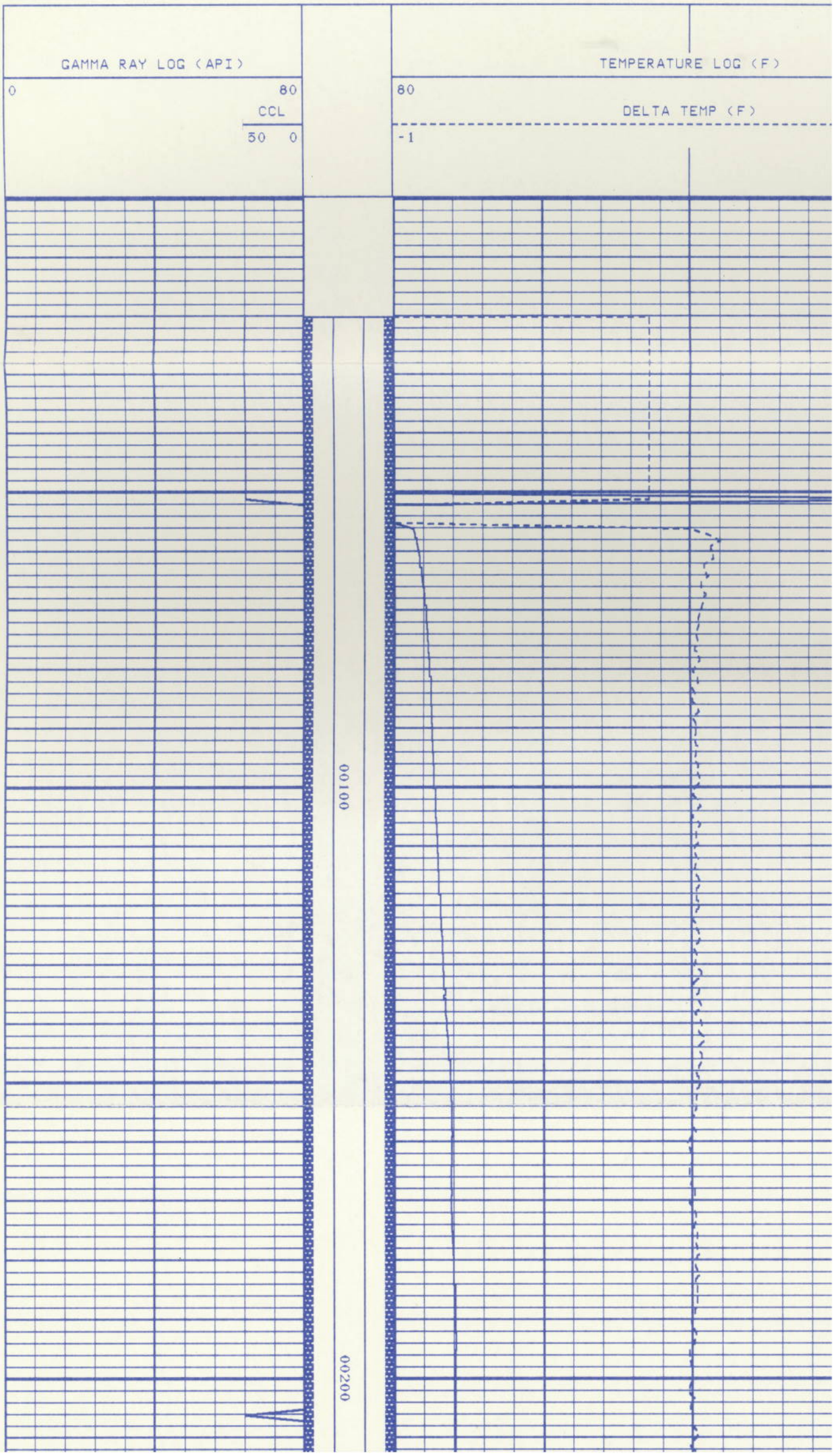
SIZE	WGT	FROM	TO
5.5 T	20	0	3162
9 5/8	N/A	0	3650

GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

REMARKS RUN (1)

TOOL CONFIGURATION WAS ONE DETECTOR ABOVE AND BELOW INJECTOR
PUMP-IN RATE OF 200 GPM. ESTABLISHED FOR RUNS.
PUMP-IN RATE OF 500 GPM. PRIOR TO LOGGING PASS DOWN
WELL SHUT-IN 48 HRS. READINGS.
LOG TIED INTO OPEN HOLE LOG DATED 1964 (WELEX). RUN (2/21.

TEMPERATURE LOG - SHUT IN 48 HRS.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CCL
30
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TEMPERATURE LOG (F)
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DELTA TEMP (F)
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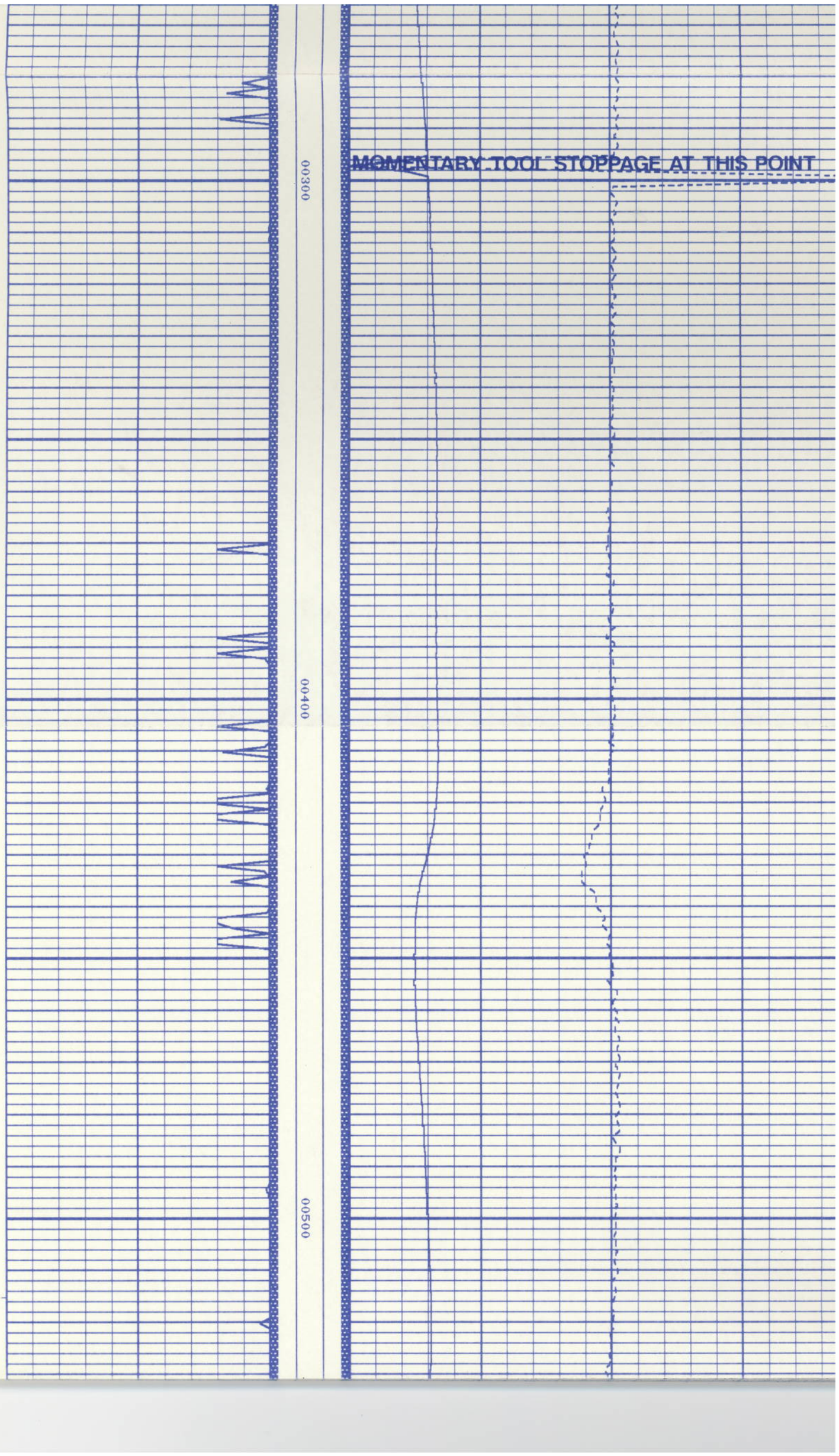
00100
00200


MOMENTARY TOOL STOPPAGE AT THIS POINT
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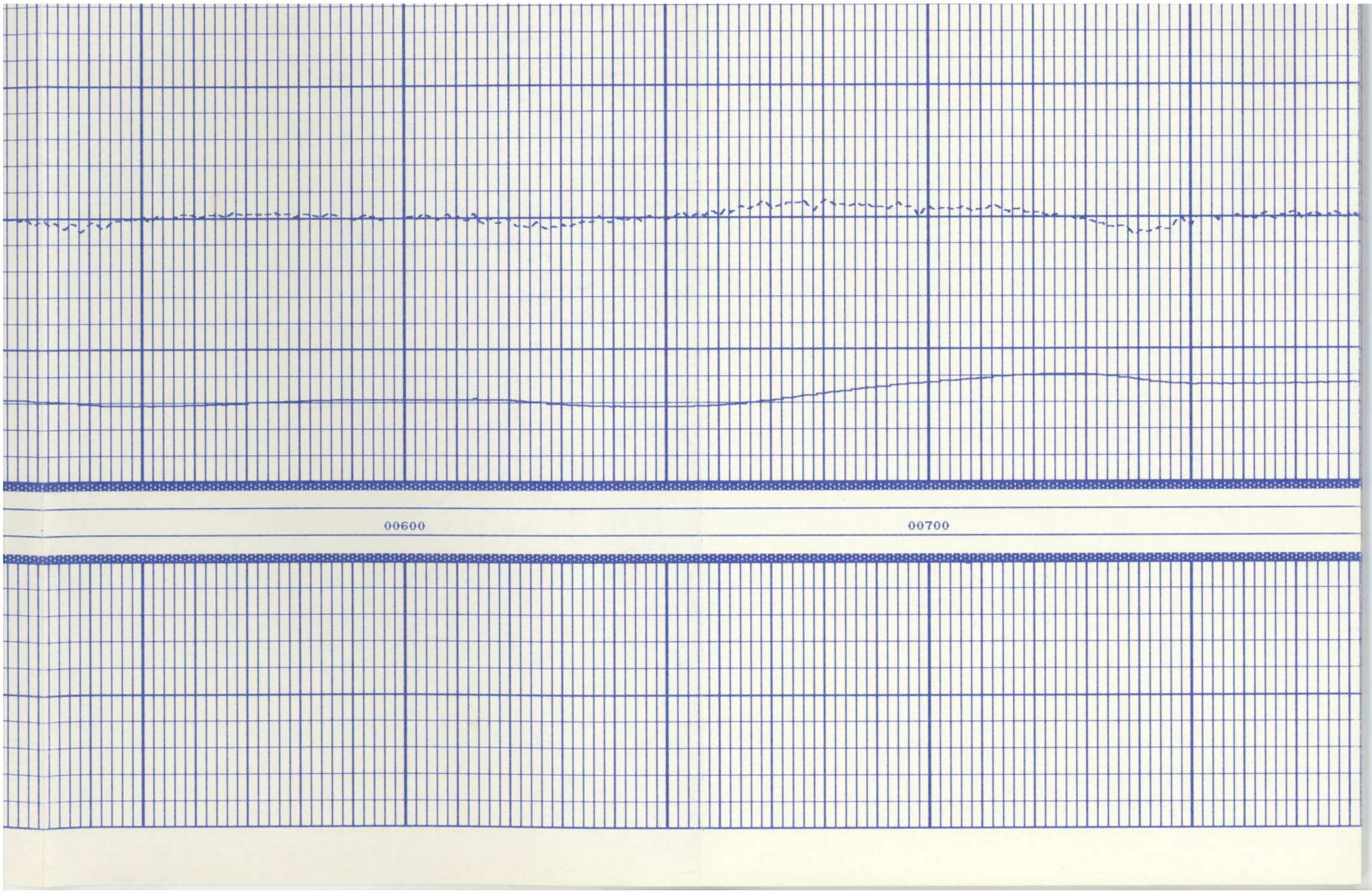
00400
00500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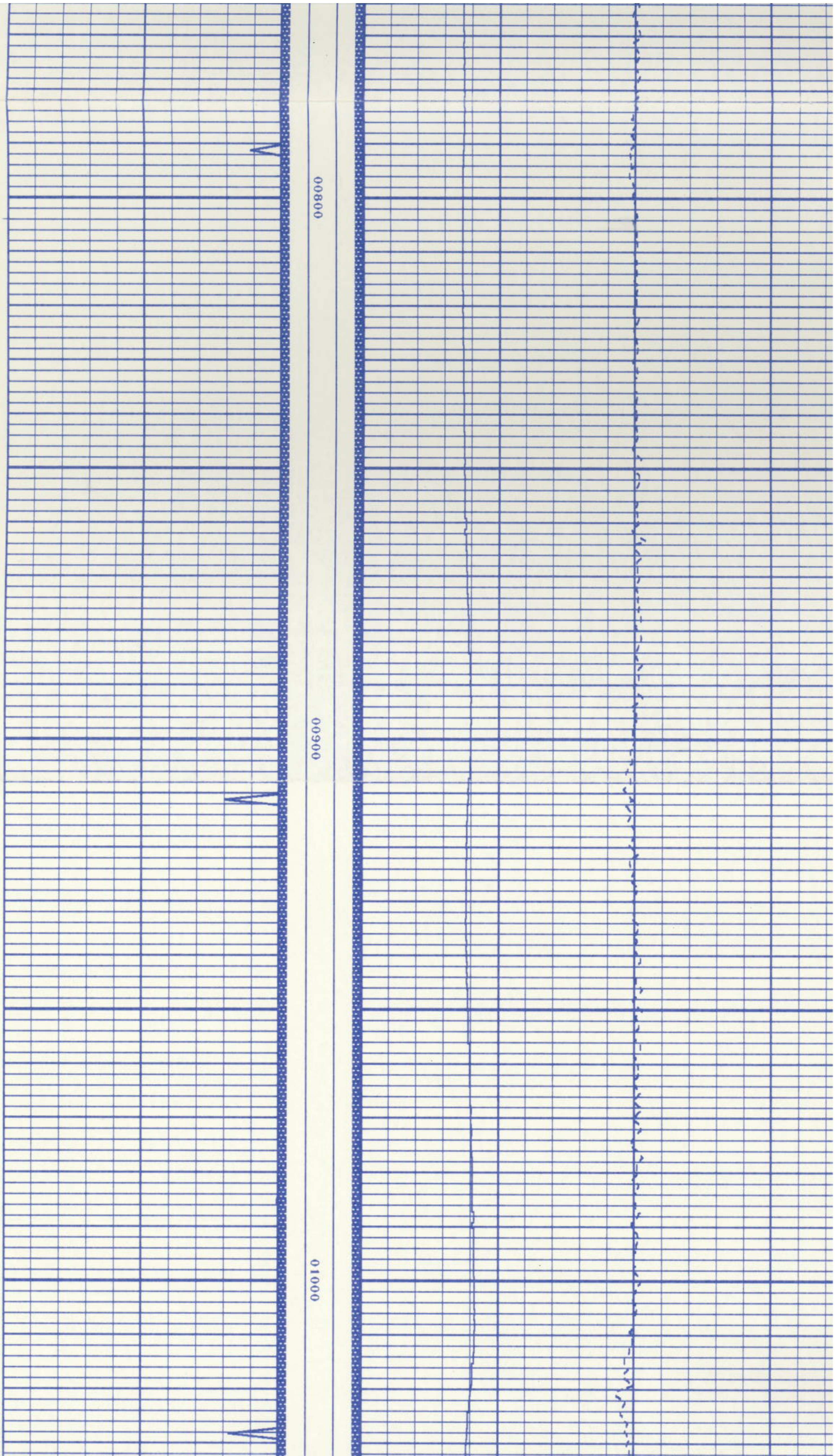
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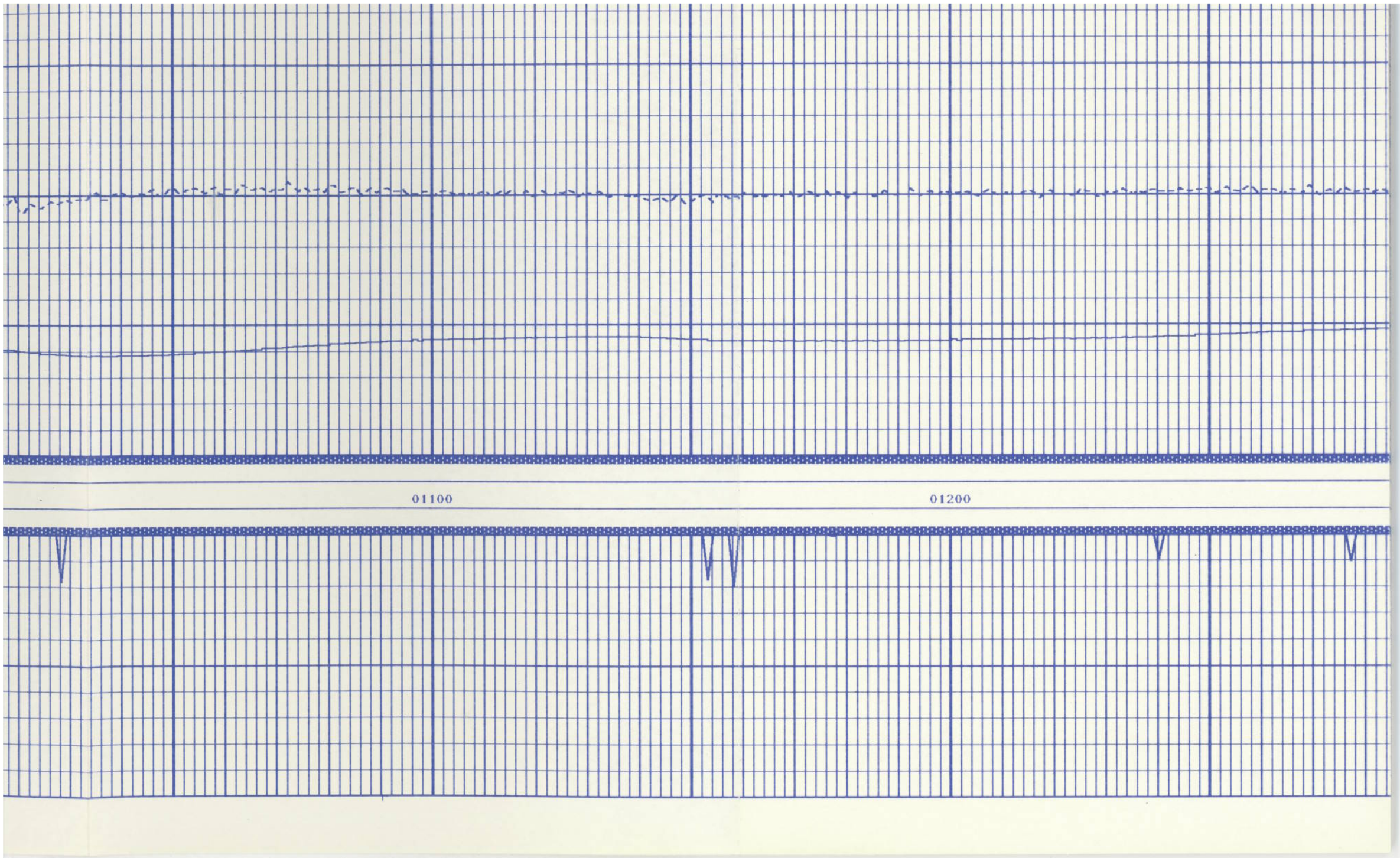
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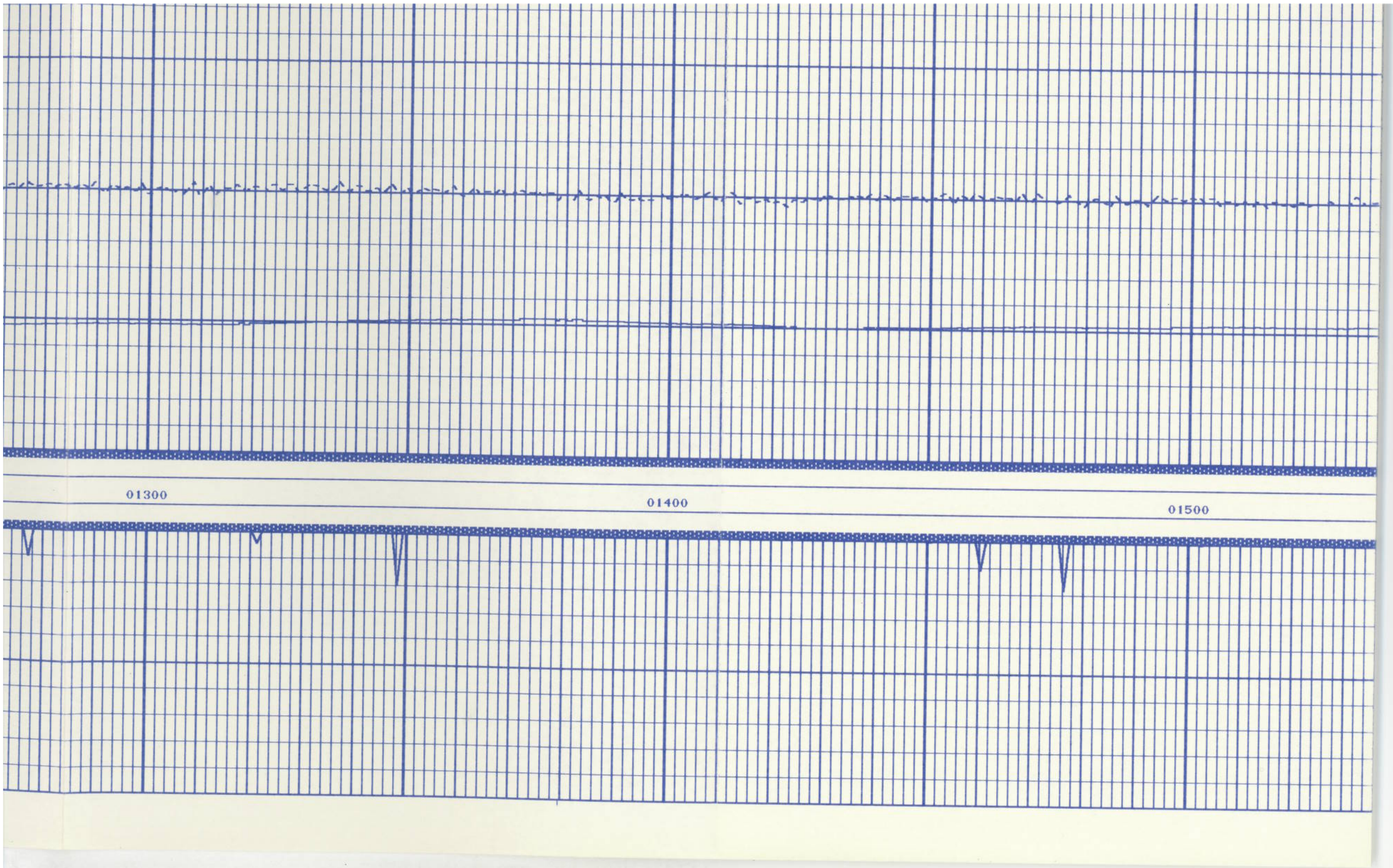
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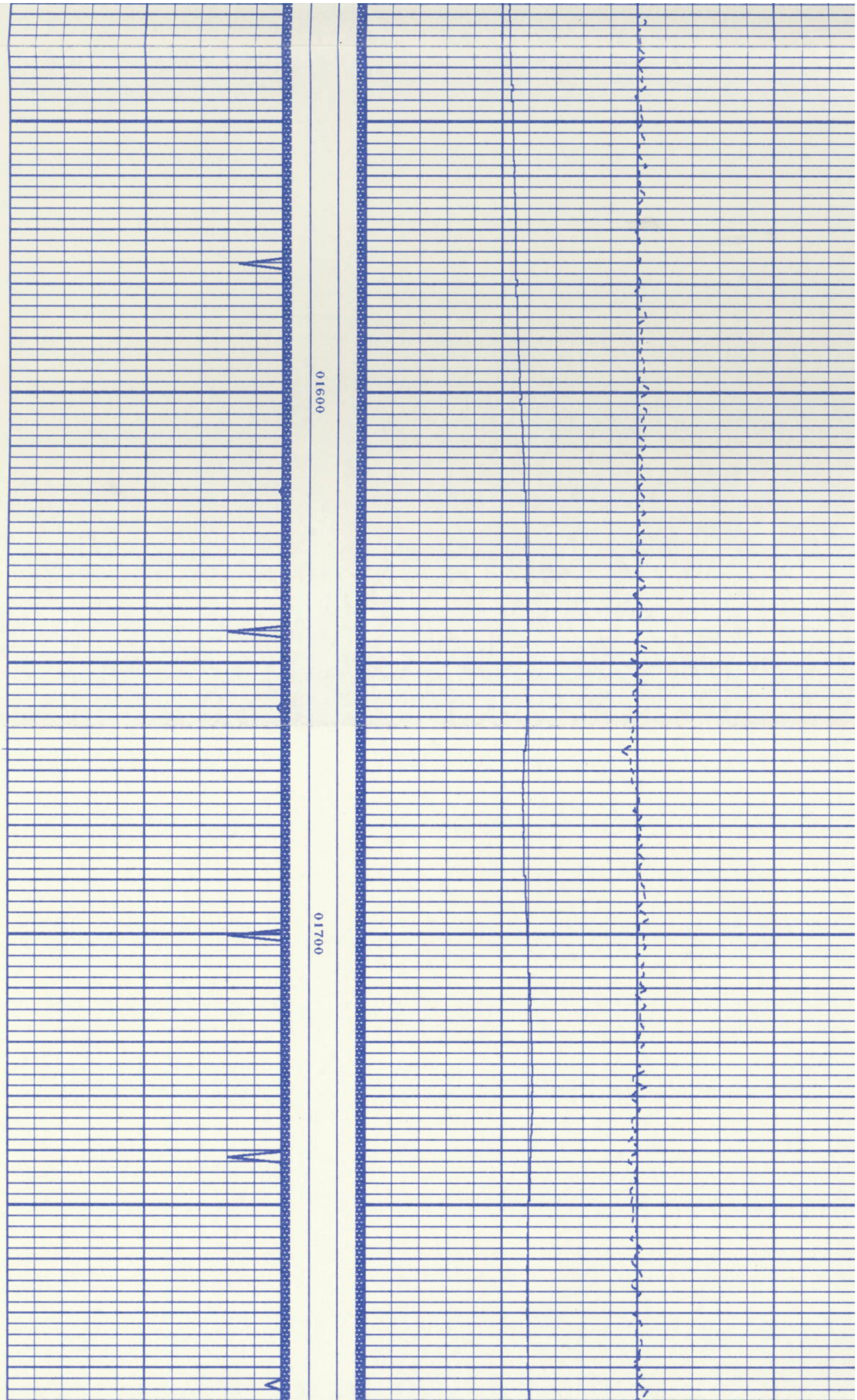
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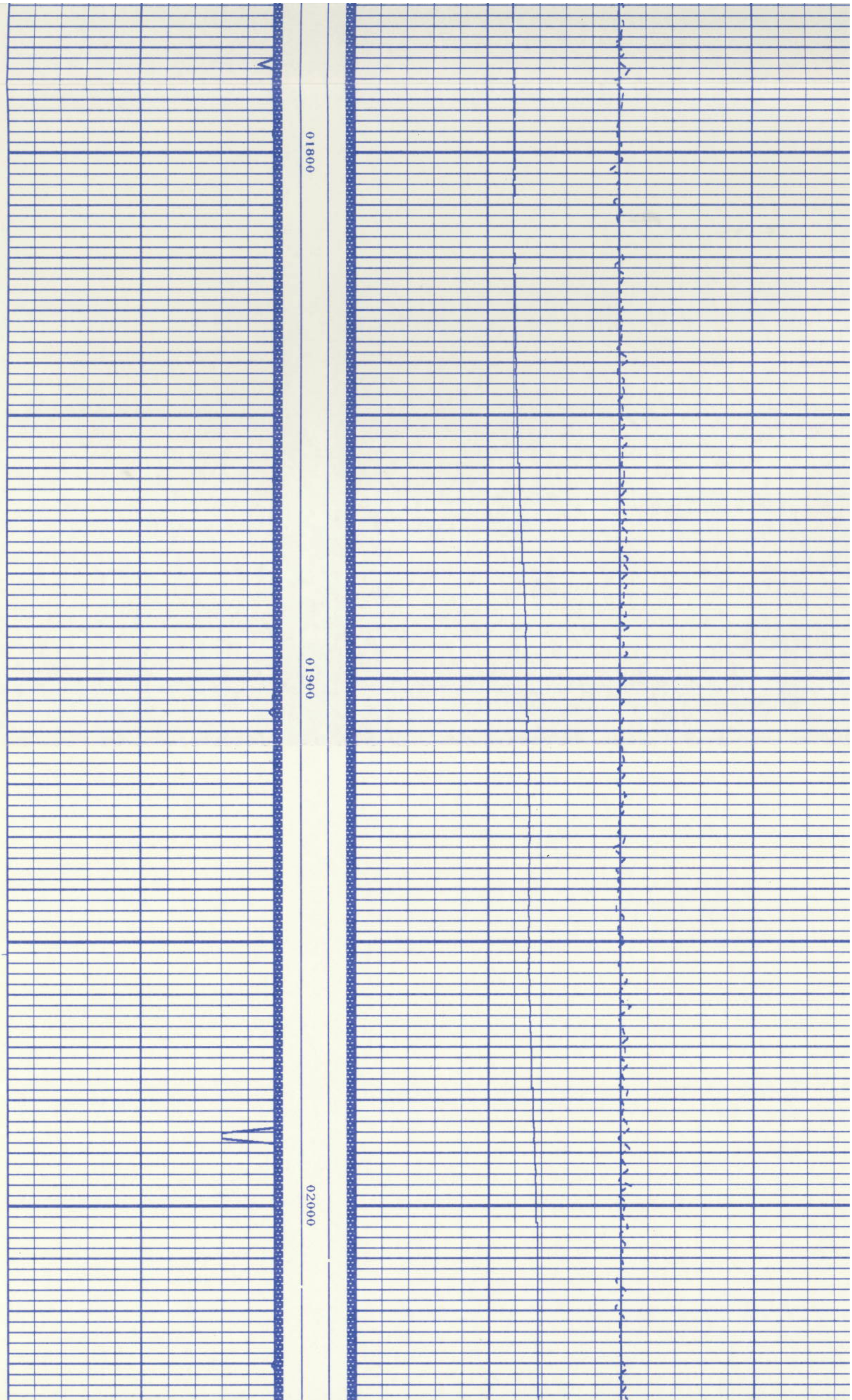

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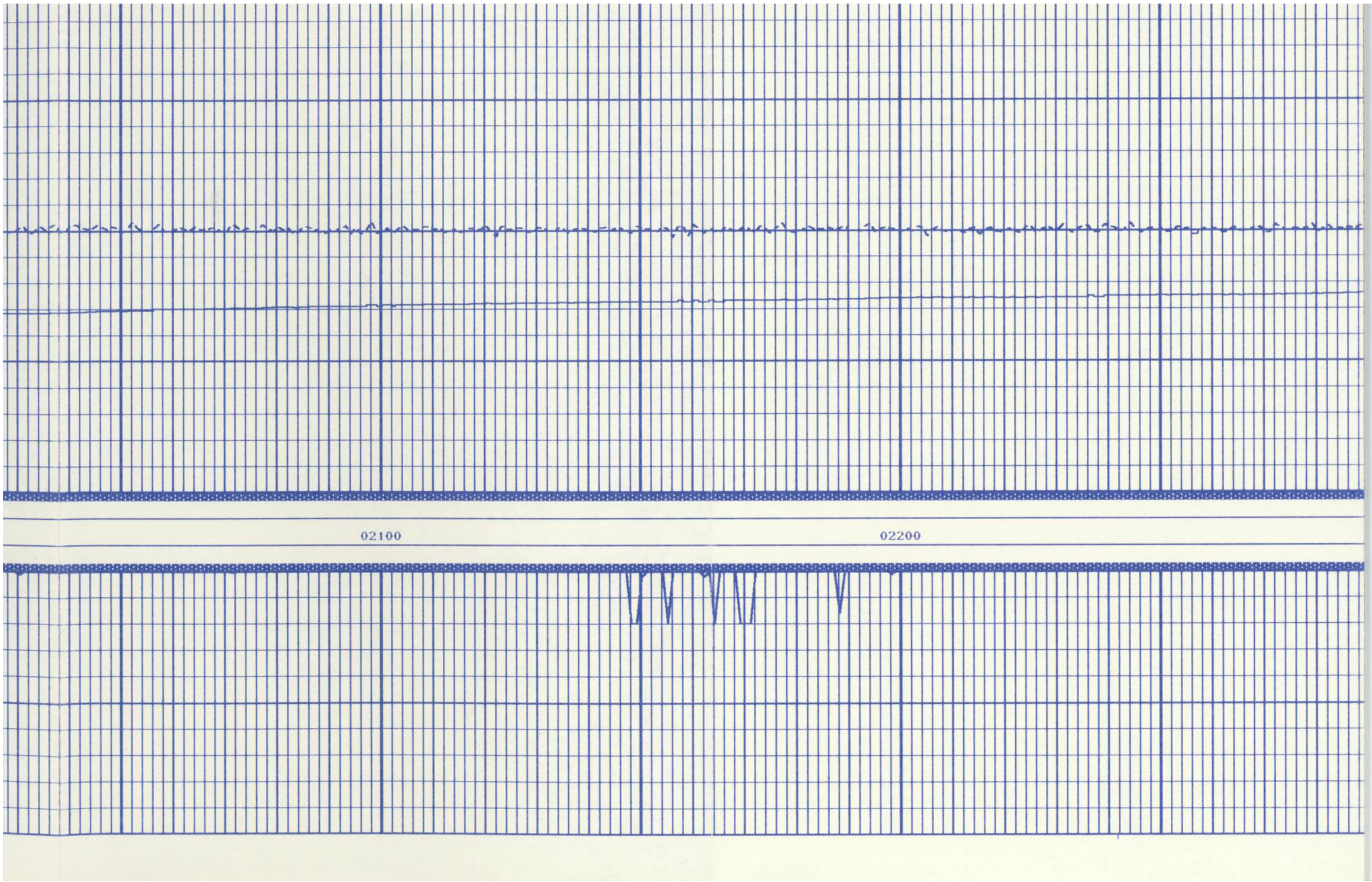
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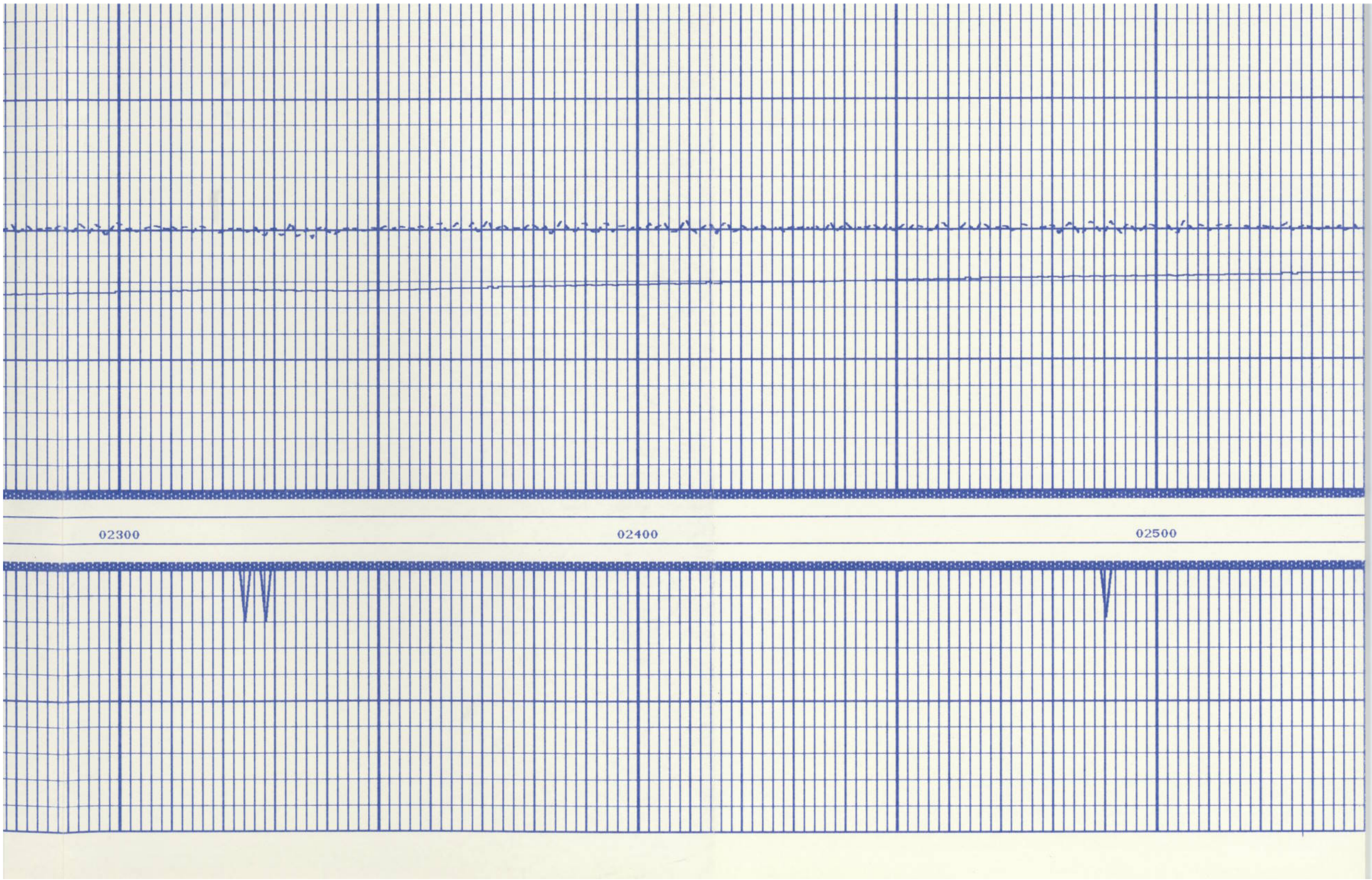
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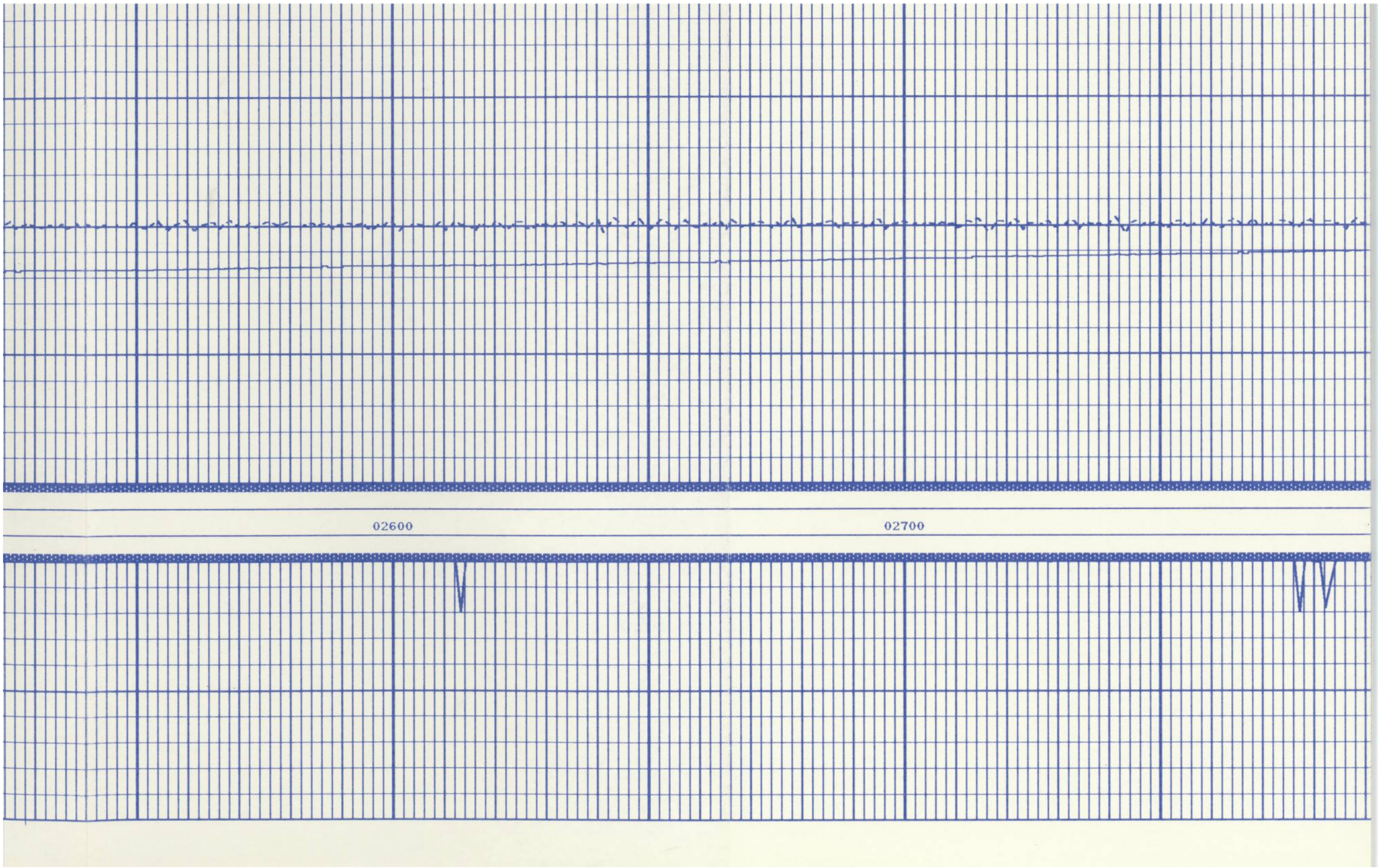
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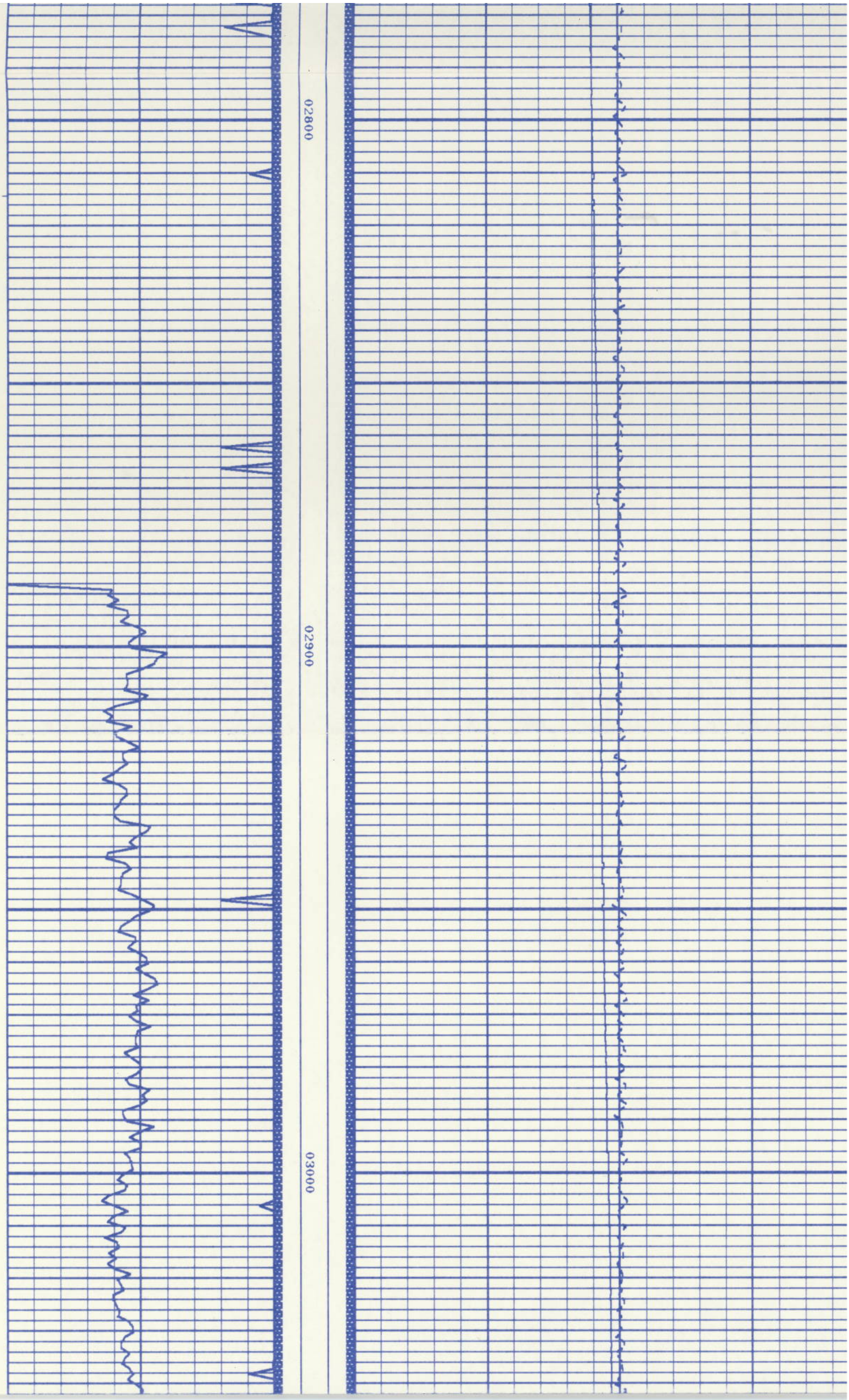
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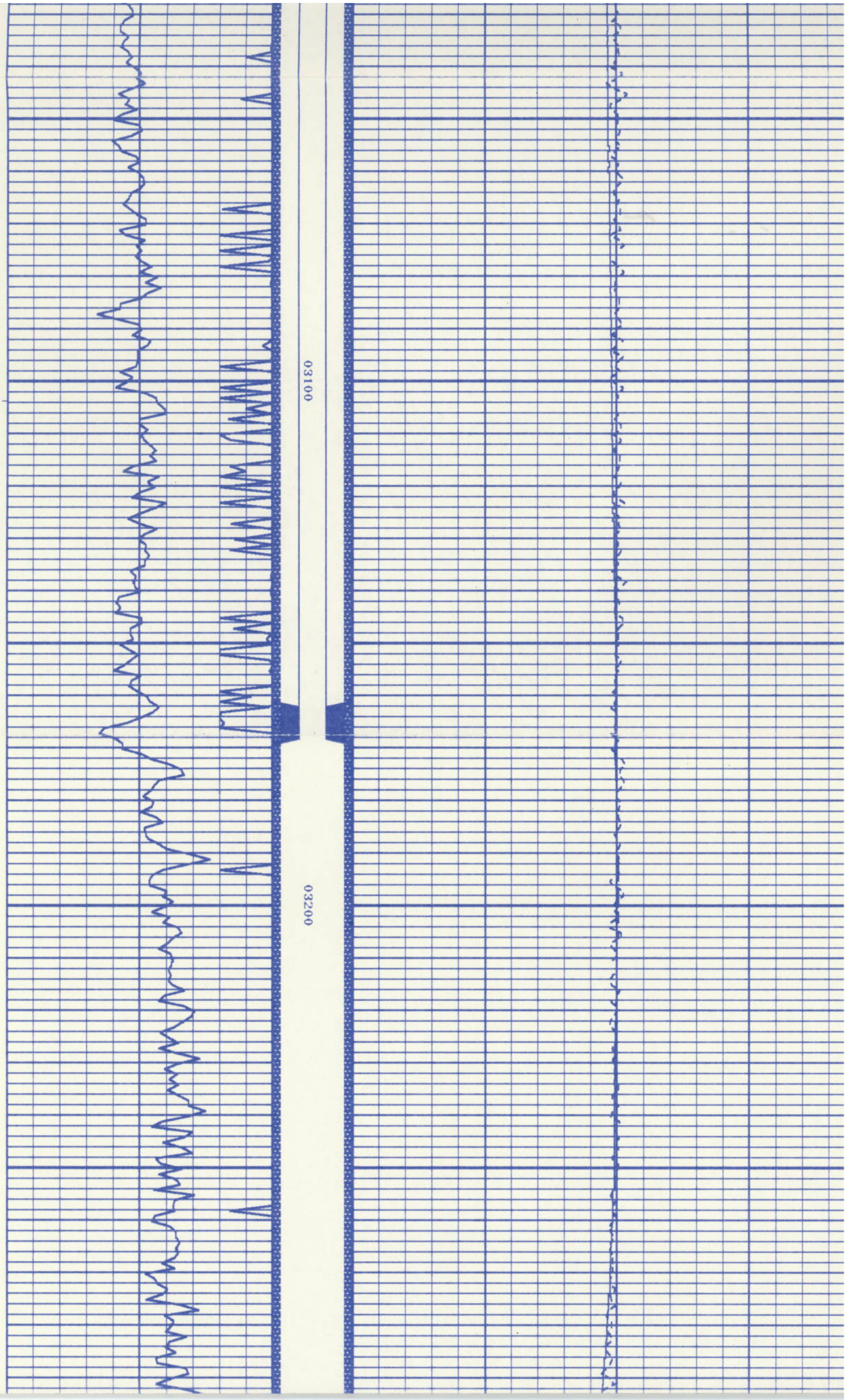
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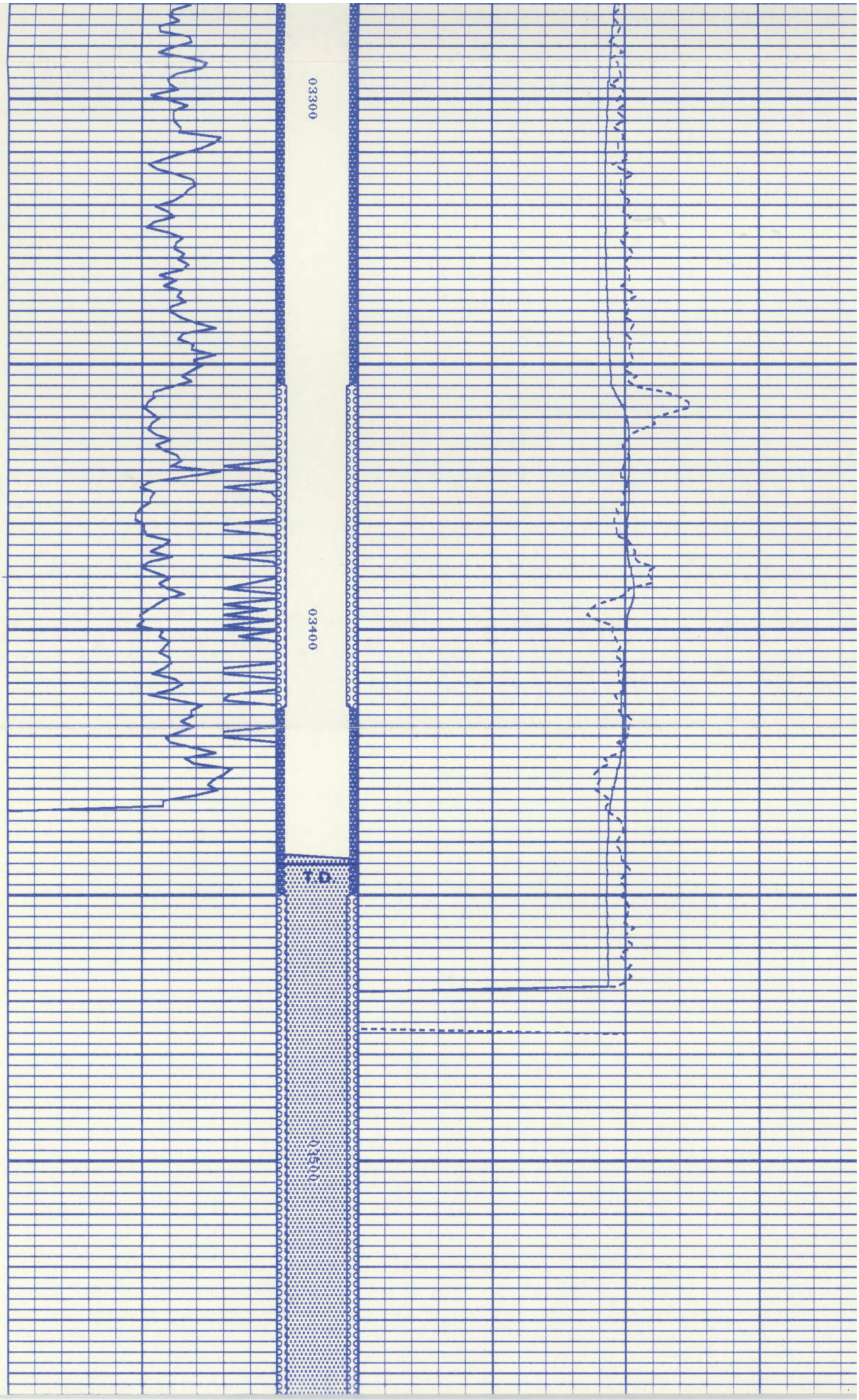

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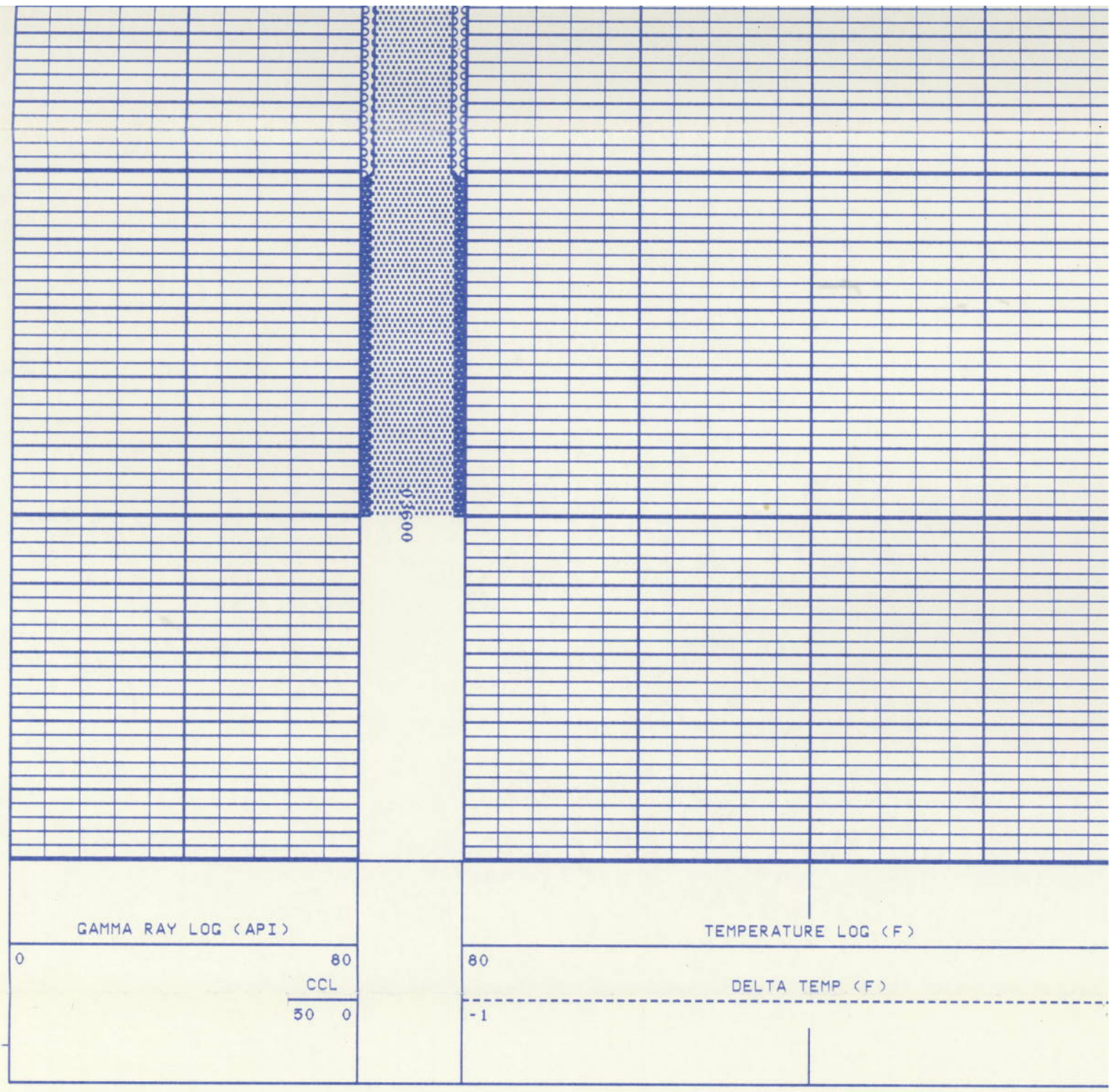
03400
T.D.
03500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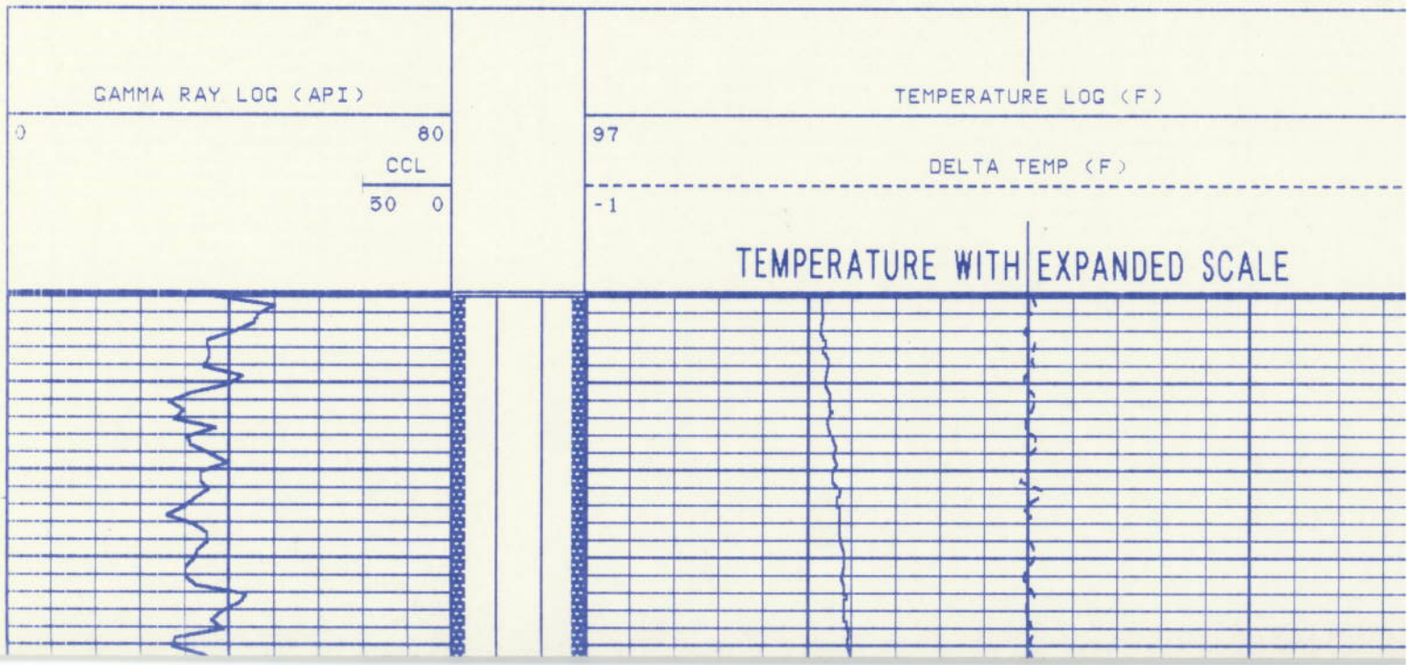
0
80
CCL
50 0
TEMPERATURE LOG (F)
60
DELTA TEMP (F)
-1


GAMMA RAY LOG (API)
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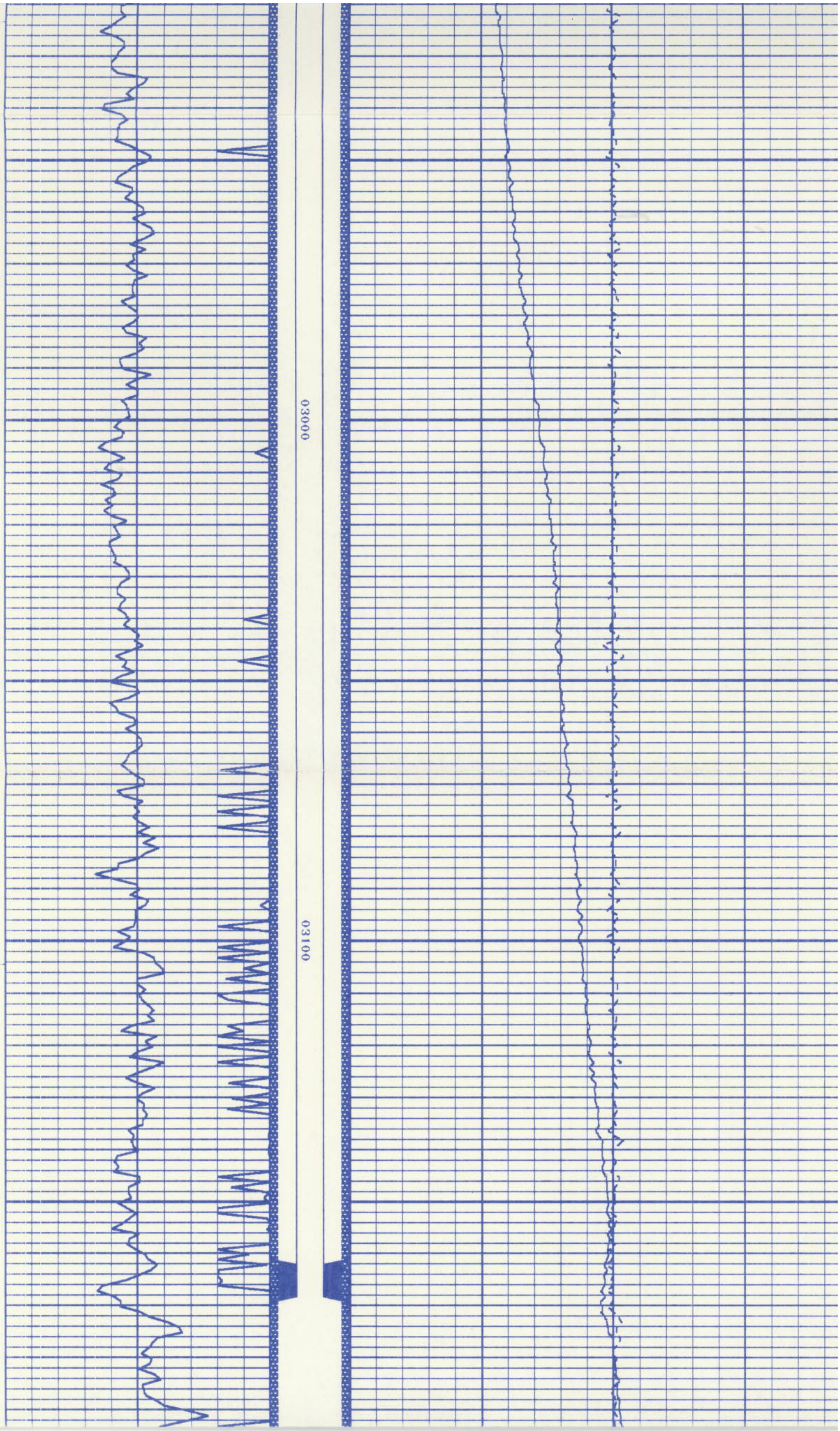
80
CCL
50 0
TEMPERATURE LOG (F)
97
DELTA TEMP (F)
-1
TEMPERATURE WITH EXPANDED SCALE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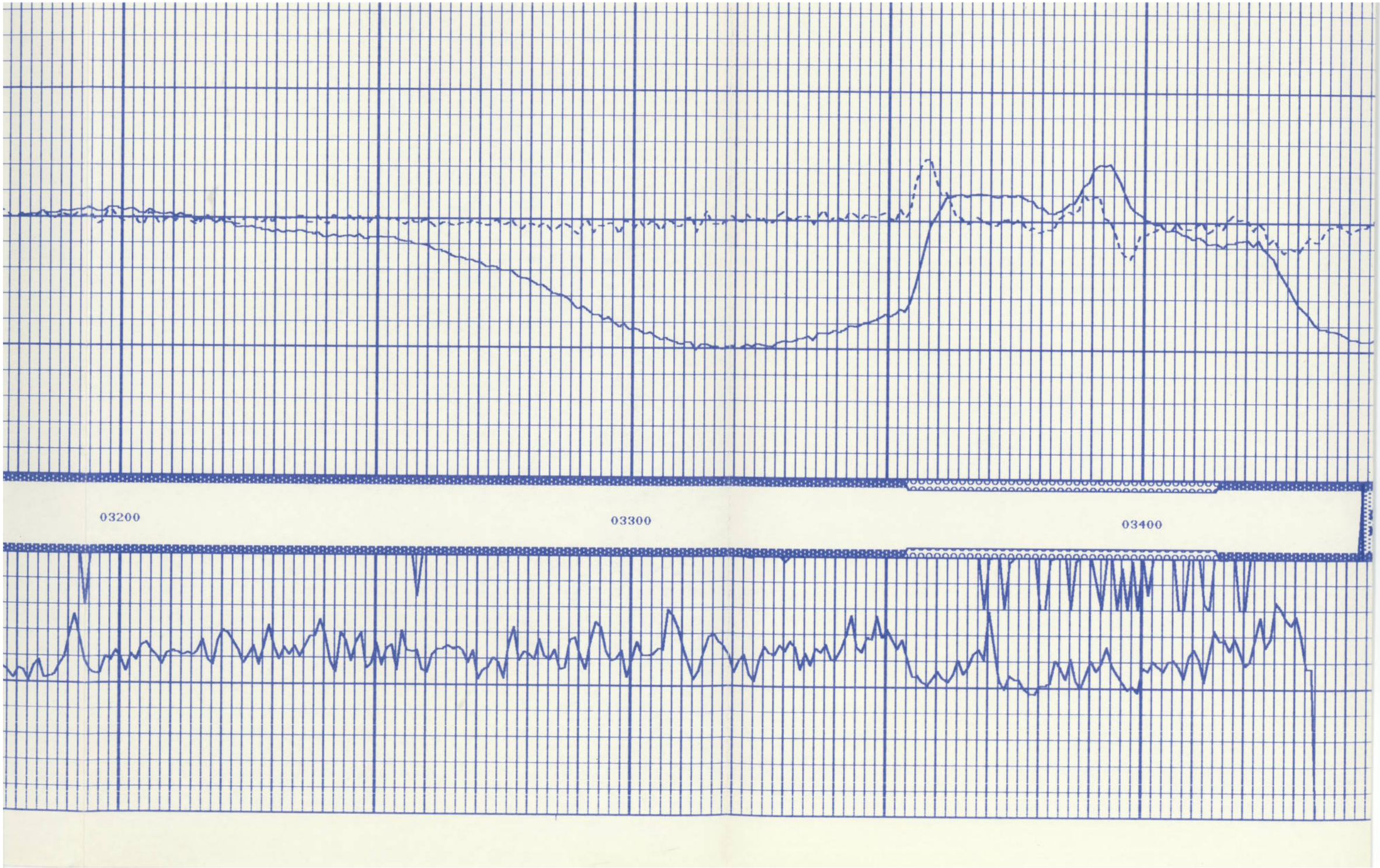
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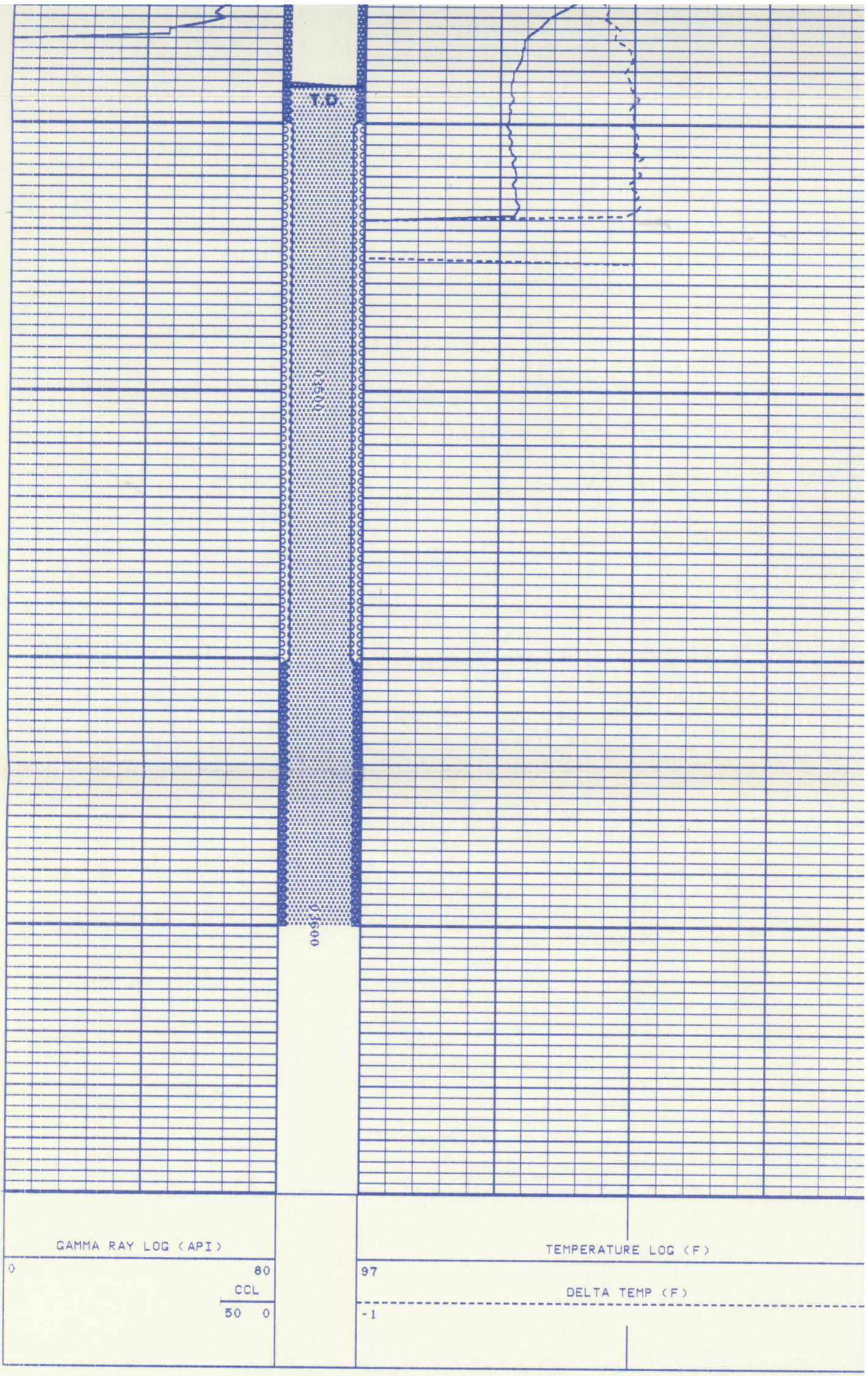
T.D.
0350
0360
GAMMA RAY LOG (API)
0
80
CCL
50
0
TEMPERATURE LOG (F)
97
DELTA TEMP (F)
-1

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APPENDIX H

ANNULUS PRESSURE TEST